SWIS #55-AA-0002

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. 94-381

WASTE DISCHARGE REQUIREMENTS
FOR
COUNTY OF TUOLUMNE
JAMESTOWN SANITARY LANDFILL FACILITY
CLASS III LANDFILL
TUOLUMNE COUNTY

The California Regional Water Quality Control Board, Central Valley Region, (hereafter Board) finds that:

1. Tuolumne County (hereafter Discharger), submitted an Amended Report of Waste Discharge, dated 2 March 1994. The Discharger submitted a Water Monitoring Plan, dated June 1992, which proposed a detection monitoring program in conformance with Title 23, California Code of Regulations, Division 3, Chapter 15 (hereafter Chapter 15).

2. The facility was previously regulated by Waste Discharge Requirements Order No. 88-084 in conformance with Chapter 15. Order No. 88-084 was amended 17 September 1993 by Order No. 93-200 implementing State Water Resources Control Board Resolution No. 93-62 and federal municipal solid waste regulations (Subtitle D). In addition, the Dischargers's monitoring program for ground water and surface water is revised to satisfy the requirement of Article 5 of Chapter 15, as amended 1 July 1991, and State Water Board Resolution No. 93-62.

3. The 54-acre facility is owned by Tuolumne County and is currently operated under contract by the Central Sierra Landfill, Inc. The facility is about three miles southwest of the City of Sonora and one mile southeast of the City of Jamestown, in the North-1/2 of Section 14, T1N, R14E, MDB&M, as shown in Attachment "A", which is incorporated herein and made part of this Order.

4. The existing waste management unit (WMU) is on approximately 54 acres. The existing waste disposal footprint consists of approximately 17 acres, as shown in Attachment "B", which is incorporated herein and made part of this Order. Approximately 1.5 acres of this area is proposed to be clean closed and consolidated into the active disposal area of the landfill, resulting in a waste disposal footprint of approximately 15.5 acres. The remaining 37 acres is used for site access, scalehouse, staging areas, storm water runoff control, cover soil borrow, and as a buffer to surrounding land uses.

5. The life expectancy of the landfill is approximately 2 years whether or not maximum capacity has been reached. Closure will be initiated in the Summer of 1996 in conformance with Chapter 15 and Subtitle D.

6. The Discharger proposes to continue to discharge municipal solid waste, commercial wastes industrial wastes, and recreational wastes. Other wastes include medical, tires, and dead animals.

7. This existing landfill has been in operation since 1974. The landfill was under the administrative jurisdiction of the County Road Department prior to 1980 when this responsibility was transferred to the County Division of Environmental Health. Responsibility was transferred to the Department of Transportation and Engineering Services

in 1990. A Division of Solid Waste was created and is now the newly organized Department of Public Works, therefore, Tuolumne County owns the site.

WASTES AND THEIR CLASSIFICATION

8. The Discharger proposes to continue to discharge solid waste for disposal in the landfill, as shown on Attachment "B". These wastes are classified as 'nonhazardous solid waste' or 'inert waste', using the criteria set forth in Chapter 15. The landfill receives about 95 percent of the County's solid waste. The discharge rate is about 65,000 cubic yards of compacted waste per year (31,000 tons per year), or approximately 100 tons per day.

9. The landfill was designed with leachate and gas control systems for the site. The systems consisted of a gravel-filled sump following the perimeter of the toe ends of the two fill areas. This design is not considered a dendritic system. Access to the West system was lost (buried) around 1980. The North system is reported to be still functioning as a sampling access. It is also reported that pumping of leachate for removal and disposal has occurred in the past from this system, but details are limited. The County presently does not have a formal collection and disposal procedure for leachate in place at this site. There are currently no surface impoundments for leachate at this site.

DESCRIPTION OF THE SITE

10. Land within 1000 feet of the facility is used as follows: north and west: zoned residential, 5-acre minimum; south and east: zoned large parcel, agricultural, and used predominantly for cattle grazing.

11. The most intense land use exists to the west of the facility, consisting of a small subdivision of approximately 100 homes (Motherlode West), 1.3 mile from the facility. One-half mile to the northwest is the edge of the Jamestown town site. Several homes are about one-half to the northwest is the edge of the Jamestown town site. Several homes are about one-half mile to southwest of the facility.

12. The landfill is in an area of grassland, open pasture, and medium stands of oak and brush. The rolling hill topography is characteristic of the Sierra Foothills.

13. The landfill facility is on a ridge at the upper end of several small ravines, at an elevation of about 1800 feet. The working disposal area is situated between and to the east of two knolls.

14. The general site is characterized by a thin soil mantle (2-3 feet) overlying about 15. feet (average depth) of metamorphic, fractured, weathered hard rock [illegible] competent bedrock. The greenschist is fissile in nature as it breaks into slate-like slabs in outcrop. The schist's strike N-S and dip steeply (70° - 85°) to the east. The bedrock is characterized by joints occurring in various directions. Quartz veins generally following the strike of the bedrock have been reported at the site. Although the schist is a fractured formation, it is reported to contain fines existing in the fractures comprised of a high percentage of clay.

15. In general, the hydrologic regime at the site is expected to be a hardrock, fracture-dominated type, with water flowing along fractures. At this site, recharge areas are limited and on-site since the facility forms a ridge. The zone of oxidation (weathered bedrock) is considered more permeable than the underlying bedrock and could give rise to local perched conditions. No definable ground water table exists in the area of the site. Ground water is encountered in

fracture zones at varying depths and yields are typically low. The piezometric surface of the ground water generally mirrors surface topography. Hydraulic conductivities are typically anisotropic in the fractured metamorphic rocks underlying the site, i.e., ground water moves more easily along strike and down dip than it does perpendicular to strike.

16. The facility is reported to be in a ground water deficient area. A water supply well (east) was drilled to provide water for operation, but was abandoned as the basic supply source due to low yield. This well is reported to have tapped a fracture at a depth of 500 feet and yielded only three gallons/minute. Results of analysis (December 1987) characterized the water as moderately mineralized (iron, manganese, and total dissolved solids).

17. Water monitoring has been conducted at the landfill on a regular basis since December 1988. Through November 1991, the ground water system was comprised of 4 wells; TM-1, TM-2, TM-3 and TM-4, east, north, west, and south of the landfill, respectively, as shown on Attachment "B". In December 1991, TM-1 was abandoned by grout sealing the entire well bore, and a new monitoring well, TM-1R was drilled to replace it. TM-1R is located a few feet southeast of where TM-1 was located. Well TM-4, however, has not been sampled regularly due to a lack of water in the well. Pursuant to the Board's recommendation in September 1991, well DW-4 has been monitored as a replacement for TM-4. Background water quality was monitored through sampling of an off-site water supply well, CFW-1 (Campbell Flat Well), located approximately 4,500 feet east of the landfill and was replaced by well DW-2 in the first quarter of 1992.

18. Drainage and run-on from the west and south fill faces are collected in perimeter earth ditches and directed to natural drainage courses to the west and south, respectively. Drainage and run-on from the northwest, north, and east fill faces are collected by perimeter earth ditches, earth berms, and asphalt curbs and directed to sedimentation ponds A and B to the north of the fill area. Storm water is discharged from the ponds A and B to the App ditch, which discharges into a natural drainage course west of the landfill site. Storm water from the emergency spillway from Pond B discharges to Pond C and D. Ponds C and D discharge to the south side of Campo Seco Road, which discharges into a natural drainage course.

19. Spring activity is reported to be present on the western side of the site during wet years. A seasonal spring (JS-1) between the landfill and TM-2 was uncovered during construction activities on the northern portion of the landfill. The initial sampling event at the spring indicated the presence of vinyl chloride, however, vinyl chloride has not been detected in any subsequent sampling events at this site. A collection tank was installed in order to collect and sample the spring water. Since that time the spring water is pumped from the collection tank; samples are collected, analyzed, and reported along with the required monitoring program. The water pumped from the collection tank is used for on-site dust control.

20. The beneficial uses of ground water are domestic, municipal, agricultural, and industrial supply.

21. The site received an average of 33 inches of precipitation per year, as measured at the City of Sonora, between the years 1887 and 1987. The mean evaporation for this site is 64 inches per year, as measured at Don Pedro Reservoir (19 year average), about 12 miles south of the site. The dry summers at both Jamestown and Don Pedro are similar. Average evaporation for the period between May-November is 50 inches.

22. The 100-year, 24-hour precipitation event for stationed nearest the site are 0.25 inches/hour based on historic data gathered at the Sonora RS, 0.31 inches/hour based on the Long Barn

Station, Station No. B30 2003 0, elevation 4963 feet MSL (State of California, Department of Water Resources, Rainfall Depth-Duration-Frequency for California, November 1982, updated April 1983 and August 1986), and 0.23 inches/hour based on the Copperopolis Station, Station No. B40 5007 0, elevation 1000 feet MSL (State of California, Department of Water Resources, Rainfall Depth-Duration-Frequency for California, November 1982, updated April 1983 and August 1986).

23. The facility is at an elevation about 300 feet above the drainage courses of Woods and Sullivan Creek and is not considered within a 100-year flood plain.

24. Surface drainage is to the southeast is to an unnamed tributary to Sullivan Creek, tributary to tributary to Lake Don Pedro Reservoir. Surface drainage to the north and west is to a seasonal drainage, tributary to Woods Creek, tributary to Lake Don Pedro Reservoir.

25. The beneficial uses of Sullivan Creek and Woods Creek are domestic and agricultural supply; ground water recharge; and preservation and enhancement of fish, wildlife and other aquatic resources. The beneficial uses of Lake Don Pedro, in addition to the above, are municipal supply; recreation; esthetic enjoyment; navigation; fresh water replenishment; and hydroelectric power generation.

26. The only known fault in the area is about one mile from the facility. Geomorphic evidence of any recent seismic activity is lacking.

OPERATION AND DESIGN OF FACILITIES

27. Operation of the facility began in 1974 on the western ravine/central landfill area. The base of this ravine was the location of the old Jamestown burn dump, which is presently considered inactive. In initial operation of the Jamestown Sanitary Landfill, portions of the ravine and areas designated for refuse disposal were stripped for access and to provide cover material. Operations shifted in 1980 to the northern ravine. These areas have merged to constitute one canyon fill.

28. Prior to waste disposal, Order No. 74-445 discharge specifications required that impervious material having a permeability rate of 10^{-6} cm/sec or less be placed on the bottom and sides of all areas receiving solid waste.

29. As previously referred to, the site was designed with two leachate collection systems. Intermittent inspections of the west leachate collection system during the period 1974-77 revealed little leachate produced. The County discontinued submittal of monitoring reports at this time. Access to the system was lost in 1980. The north system was installed prior to placement of refuse in that area. Leachate from this system was first sampled and tested in late 1987.

30. Three borings (B-1, B-2, and B-3) were drilled through the central landfill area as part of a slope stability investigation. During an inspection on 2 November 1994, Board staff observed that the borings had been buried during grading operations. The Discharger proposes to investigate the exact location of the borings and report on how they propose to abandon B-1, B-2, and B-3. Geologic logs indicate all three borings were drilled through the clay liner and into the underlying weathered schist.

31. It was originally estimated that sufficient material existed on-site for base seal and daily, intermediate, and final cover material to last the life span of the facility. However, the facility

is currently lacking adequate material for these purposes. Presently, an alternative daily cover called Fabri Soil, is utilized, under certain conditions, as approved by the California Integrated Waste Management Board and the Board. It is anticipated that final cover earthen material will need to be imported.

32. Detection monitoring at wells TM-1R and TM-2 has indicated a statistically significant change in ground water chemistry. Dichlorodifluoromethane was detected and verified in the third quarter 1993 and has been detected at levels up to 12.0 µg/l in eight of the ten samples collected at TM-1R since first detection. Chloroethane has been detected at concentrations up to 6.1 µg/l in five of six samples since May 1993. Vinyl chloride has been identified sporadically since November 1992 with three of the eight samples collected since that time reporting vinyl chloride above the laboratory detection limit. Vinyl Chloride has been detected at the detection level once at TM-2 (fourth quarter 1992), but has not been detected since. In addition, monitoring data provide evidence of a release of inorganic constituents in monitoring well TM-2.

33. The Discharger has submitted an evaluation monitoring program to determine the horizontal and vertical extent of the ground water contamination. Additional ground water monitoring wells TM-2R, TM-5, TM-6, TM-7, and an enhanced collection trench for the spring (JS-1) are proposed to be installed and used to define the contaminant plume. A permanent replacement well for TM-4 (DW-4 has been an interim replacement well since 1991) is planned following the clean closure of the southern area of the landfill. The Board recommended that the Discharger immediately implement the evaluation monitoring program and is required to submit an engineering feasibility study for corrective action which meets the requirements of §2550.10 of Chapter 15. The Discharger needs to submit the design and construction details for the monitoring wells, abandonment of borings B-1 and B-3, and the investigation report for B-2. The material should include geologic well logs, cross-sections, a hydrogeologic map, and analyses of hydrogeologic data (i.e., flow direction, gradient) derived from the monitoring wells.

CEQA CONSIDERATIONS

34. The action to update WDRs for this landfill is exempt from the provisions of the California Environmental Quality Act (Public Resources Code Section 21000, et seq.), in accordance with Title 14 CCR, Section 15301 for existing facilities.

OTHER LEGAL REFERENCES

35. On 9 October 1991, the United States Environmental Protection Agency (USEPA) promulgated regulations (Title 40, Code of Federal Regulations, Parts 257 and 258, "federal MSW regulations" or "Subtitle D") that apply, in California, to dischargers who own or operate Class II or Class III landfill units at which municipal solid waste (MSWLF) is discharged. The majority of the federal MSW regulations became effective on the "Federal Deadline", which is 9 October 1993.

36. This Order implements (1) the Water Quality Control Plan for the Sacramento River, Sacramento-San Joaquin Delta, and San Joaquin River Basins (5A, 5B, 5C), Second Edition; (2) the prescriptive standards and performance goals of Chapter 15, Division 3, Title 23 of the California Code of Regulations, effective 27 November 1984, and subsequent revisions; (3) the prescriptive standards and performance criteria of Part 258, Title 40 of the Code of Federal Regulations (Subtitle D of the Resource Conservation and Recovery Act);

and (4) State Water Resources Control Board Resolution No. 93-62, Policy for Regulation of Discharges of Municipal Solid Waste, adopted 17 June 1993.

37. Article 5 of Chapter 15 establishes a time schedule for submittal of an evaluation monitoring program, engineering feasibility study, and for initiating a corrective action program. The County's 10 November 1994 letter states that it cannot meet the required dates because of contract requirements for bidding and budget requirements for financing. Therefore, this Order establishes alternative compliance dates for the tasks in Provisions D.8.

PROCEDURAL REQUIREMENTS

38. All local agencies with jurisdiction to regulate land use, solid waste disposal, air pollution, and to protect public health have approved the use of this site for the discharges of waste to land stated herein.

39. The Board has notified the Discharger and interested agencies and persons of its intention to revise the waste discharge requirements for this facility.

40. In a public hearing, the Board heard and considered all comments pertaining to this facility and discharge.

IT IS HEREBY ORDERED that Order No. 88-084 is rescinded and Attachment 1 of General Order 93-200 is amended to delete the Jamestown Sanitary Landfill Facility and it is further ordered that the County of Tuolumne and its agents, assigns and successors, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, shall comply with the following:

A. PROHIBITIONS:

1. The discharge of 'hazardous waste' and 'designated waste' at this facility is prohibited. For the purposes of this Order, the terms 'hazardous waste' and 'designated waste' are as defined in Chapter 15.

2. Discharge of waste to either a landfill unit that has not received wastes or to a lateral expansion of a landfill unit is prohibited.

3. The discharge of liquid or semi-solid waste (i.e., waste containing less than 50 percent solids) to the landfill unit is prohibited.

4. The discharge to the landfill unit of solid waste containing free liquid or moisture in excess of the waste's moisture holding capacity is prohibited.

5. The discharge of solid or liquid waste or leachate to surface waters, surface water drainage courses, or ground water is prohibited.

6. The discharge of waste to ponded water from any source, is prohibited.

7. The discharge of waste within 100 feet of surface waters is prohibited.

8. The discharge of wastes which have the potential to reduce or impair the integrity of containment structures or which, if commingled with other wastes in the unit, could produce violent reaction, heat or pressure, fire or explosion, toxic by-products, or reaction products

which in turn (a) require a higher level of containment than provided by the unit, (b) are "restricted hazardous wastes", or (c) impair the integrity of containment structures, is prohibited.

B. DISCHARGE SPECIFICATIONS:

GENERAL SPECIFICATIONS

1. Wastes shall only be discharged into, and shall be confined to, the WMUs specifically designed for their containment, as described in Findings of this Order, and as shown on Attachment "B".

2. The handling and disposal of friable asbestos-containing wastes at this facility shall be in accordance with all applicable federal and state statutes and regulations.

3. A minimum separation of 5 feet shall be maintained between wastes or leachate and the highest anticipated elevation of underlying ground water including the capillary fringe. The Discharger shall determine the highest anticipated elevation of underlying ground water including the capillary fringe and report as specified in the Monitoring and Reporting Program.

4. Prior to the discharge of waste to a waste management unit, all wells within 500 feet of the unit shall have sanitary seals which meet the requirements of the Tuolumne County Health Department or shall be properly abandoned. A record of the sealing and/or abandonment of such wells shall be sent to the Board and to the State Department of Water Resources.

5. Water used for facility maintenance shall be limited to the minimum amount necessary for dust control.

PROTECTION FROM STORM EVENTS

6. Waste management units shall be designed, constructed, and operated in compliance with precipitation and flood conditions contained in the Standard Provisions and Reporting Requirements referenced in Provision D.1, below.

7. Precipitation and drainage control systems shall be designed and constructed to accommodate the anticipated volume of precipitation and peak flows from surface runoff from 1,000-year, 24-hour storms for Class II WMUs and from 100-year, 24-hour storms for Class III WMUs.

8. Annually, prior to the anticipated rainy season, any necessary erosion control measures shall be implemented, and any necessary construction, maintenance, or repairs of precipitation and drainage control facilities shall be completed to prevent erosion or flooding of the site and to prevent surface drainage from contacting or percolating through wastes.

LANDFILL SPECIFICATIONS

9. Municipal solid waste shall be discharged to the existing footprint of the existing waste management unit.

10. During the rainy season a minimum one-foot thickness of interim cover shall be maintained over all but the active disposal area of the landfill unit. The active disposal area shall be

confined to the smallest area practicable based on the anticipated quantity of waste discharge and other waste management facility operations.

LANDFILL CLOSURE SPECIFICATIONS

11. At closure, each landfill unit shall receive a final cover consisting, at a minimum, of a two-foot thick foundation layer which may contain waste materials, overlain by a one-foot thick clay liner, and finally by a one-foot thick vegetative soil layer, or an engineered equivalent final cover approved by the Board pursuant to Sections 2510(b) and (c) of Chapter 15.

12. Vegetation shall be planted and maintained over each closed landfill unit. Vegetation shall be selected to require a minimum of irrigation and maintenance and shall have a rooting depth not in excess of the vegetative layer thickness.

13. Closed landfill units shall be graded to at least a three percent grade and maintained to prevent ponding.

14. Closed landfill units with slopes greater than 10%, surface drainage courses, and areas subject to erosion by wind or water shall be designed and constructed to prevent erosion.

C. RECEIVING WATER LIMITATIONS

WATER QUALITY PROTECTION STANDARDS

The concentrations of Constituents of Concern in waters passing through the Points of Compliance shall not exceed the Concentration Limits established pursuant to Monitoring and Reporting Program No. 94-381, which is attached to and made part of this Order.

D. PROVISIONS:

1. The Discharger shall comply with the Standard Provisions and Reporting Requirements, dated September 1993, which are hereby incorporated into this Order. The Standard Provisions and Reporting Requirements contain important provisions and requirements with which the Discharger must comply. A violation of any of the Standard Provisions and Reporting Requirements is a violation of these waste discharge requirements.

2. The Discharger shall comply with Monitoring and Reporting Program No. 94-381 which is attached to and made part of this Order. A violation of Monitoring and Reporting Program No. 94-381 is a violation of these waste discharge requirements.

3. The Discharger shall receive approval from the Executive Officer before discharging waste to containment areas or WMUs constructed after the effective date of this Order. The Discharger shall submit to the Board all documentation (i.e., reports, plans, designs) required by this Order for review and approval by Board staff prior to implementation.

4. The Discharger shall notify the Board in writing of any proposed change in ownership or responsibility for construction or operation of the WMUs. The Discharger shall also notify the Board of a material change in the character, location, or volume of the waste discharge and of any proposed expansions or closure plans. This notification shall be given 180 days prior to the effective date of the change and shall be accompanied by an amended Report of Waste Discharge and any technical documents that are needed to demonstrate continued compliance with these WDRs.

5. The Discharger shall maintain waste containment facilities and precipitation and drainage controls, and shall continue to monitor ground water, leachate from the landfill units, and surface waters per Monitoring and Reporting Program No. 94-381 throughout the active life of the waste management units and the post-closure maintenance period.

6. The Discharger shall comply with all applicable provisions of 23 CCR Chapter 15 and 40 CFR Part 258 that are not specifically referred to in this Order.

7. The Discharger shall conduct a periodic load checking program. The load checking program shall ensure that 'hazardous wastes' and 'designated wastes' are not discharged to any Class III landfill unit at the facility. The program shall also ensure that wastes exceeding moisture limitations are not discharged to landfill units. A copy of the program shall be submitted to the Board for approval by 1 March 1995.

8. The Discharger shall complete the tasks outlined in these WDRs and the attached Monitoring and Reporting Program No. 94-381 in accordance with the following time schedule:

Task	Compliance Date
Submit a report providing verification of installation of monitoring wells and abandonment of borings B-1, B-2, and B-3.	**1 April 1995**
Submit a RWD for the corrective action program describing the nature and extent of the release and submit an engineering feasibility study report for corrective action. The corrective action program shall include the selected treatment and disposal system, cost estimates, and financial assurance.	**1 October 1995**
Submit a Slope Stability Report based on final grades and contours	**1 November 1995**
Submit Final Closure and Postclosure Maintenance Plan	**1 January 1996**
Initiate Corrective Action Plan for ground water contamination	**1 February 1996**
Submit progress report on the effectiveness of corrective action program	**1 May 1996**
Cease accepting waste and begin closure activities	**1 July 1996**

9. In the event of any change in ownership of this waste management facility, the Discharger shall notify the succeeding owner or operator in writing of the existence of this Order. A copy of that notification shall be sent to the Board.

10. The Discharger shall comply with all applicable provisions of Chapter 15 that are not specifically referred to in this Order.

11. The Board will review this Order periodically and will revise these requirements when necessary.

E. REPORTING REQUIREMENTS

1. The Discharger shall comply with the reporting requirements specified in this Order, in Monitoring and Reporting Program Order No. 94-381, and in the Standard Provisions and Reporting Requirements.

2. The Discharger shall submit a closure and post-closure maintenance plan (or submit suitable modifications to a preexisting plan), that complies with 40 CFR 258.60 and 258.61, with Article 8 of Chapter 15, and with Title 14 of the CCR.

3. In the event of any change in ownership of this disposal site, the Discharger shall notify the succeeding owner or operator in writing of the existence of this Order. A copy of that notification shall be sent to the Board.

I, WILLIAM H. CROOKS, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 9 December 1994.

William H. Crooks

WILLIAM H. CROOKS, Executive Officer

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Attachments

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. 94-381
FOR
THE COUNTY OF TUOLUMNE
JAMESTOWN SANITARY LANDFILL FACILITY
TUOLUMNE COUNTY

Monitoring data indicate the presence of landfill leachate in downgradient monitoring wells. Waste discharge requirements require the Discharger to develop evaluation and corrective action programs for ground water remediation.

Compliance with this Monitoring and Reporting Program, and with the companion Standard Provisions and Reporting Requirements, is ordered by Waste Discharge Requirements Order No. 94-381. Failure to comply with this Program, or with the Standard Provisions and Reporting Requirements, constitutes non-compliance with the WDRs and with the Water Code, which can result in the imposition of civil monetary liability.

A. REPORTING

The Discharger shall report monitoring data and information as required in this Monitoring and Reporting Program and as required in the Standard Provisions and Reporting Requirements. Reports which do not comply with the required format will be **REJECTED** and the Discharger shall be deemed to be in non-compliance with the WDRs. In reporting the monitoring data required by this program, the Discharger shall arrange the data in tabular form so that the date, the constituents, the concentrations, and the units are readily discernible. The data shall be summarized in such a manner so as to illustrate clearly the compliance with waste discharge requirements or the lack thereof. A short discussion of the monitoring results, including notations of any water quality violations, shall precede the tabular summaries.

Field and laboratory tests shall be reported in the quarterly monitoring reports. Quarterly monitoring reports shall be submitted to the Board by the 15th day of the month following the calendar quarter in which the samples were taken. The results of any monitoring done more frequently than required at the locations specified herein shall be reported to the Board. An annual report shall be submitted to the Board which contains both tabular and graphical summaries of the monitoring data obtained during the previous twelve months, so as to show historical trends at each well.

Method detection limits and practical quantitation limits shall be reported. All peaks shall be reported, including those which cannot be quantified and/or specifically identified. Metals shall be analyzed according to the method listed in Attachment D.

B. REQUIRED MONITORING REPORTS

1. Water Quality Protection Standard Report

The Discharger shall submit a water quality protection standard report by **15 January 1995**. Any changes to the water quality protection standard shall be described in annual monitoring reports.

2. Detection Monitoring Report

The Discharger shall submit reports of the results of detection monitoring in accordance with the schedules specified in this Monitoring and Reporting Program.

3. Annual Monitoring Summary Report

The Discharger shall submit the Annual Monitoring Summary Report as specified in the Standard Provisions and Reporting Requirements.

4. Constituents-of-Concern (COC) 5 Year Report

The Discharger shall submit reports of the results of ground water monitoring for the Constituents of Concern every 5 years, or more frequently if required. The ground water monitoring for COC Report shall alternate between the Fall and Spring seasons. The COC Report may combined with a Detection Monitoring Report or an Annual Summary Report having a Reporting Period that ends at the same time.

Standard Observations

Each monitoring report shall include a summary and certification of completion of all Standard Observations for the waste management unit, for the perimeter of the WMU, and for the receiving waters. The standard observations shall be performed on a weekly basis and shall include those elements as defined in the Standard Provisions and Reporting Requirements.

C. REQUIRED MONITORING PROGRAMS

1. Detection and Corrective Action Monitoring Program

For each monitored medium, all Monitoring Points assigned to detection monitoring, and all Background Monitoring Points shall be monitored once each calendar quarter for the Monitoring Parameters listed in this Program.

For any given monitored medium, a sufficient number of samples shall be taken from all Monitoring Points and Background Monitoring Points to satisfy the data analysis requirements for a given Reporting Period, and shall be taken in a manner that ensures sample independence to the greatest extent feasible.

Ground water sampling shall also include an accurate determination of the ground water surface elevation and field parameters (pH, temperature, electrical conductivity, turbidity) for that Monitoring Point or Background Monitoring Point. Ground water elevations taken prior to purging the well and sampling for Monitoring Parameters shall be used to fulfill the ground water gradient/direction analyses required. For each monitored ground water body, the Discharger shall measure the water level in each well and determine ground water gradient and direction at least quarterly, including the times of expected highest and lowest elevations of the water level for the respective ground water body. Ground water elevations for all background and downgradient wells for a given ground water body shall be measured within a period of time short enough to avoid temporal variations in ground water flow which could preclude accurate determination of ground water gradient and direction. This information shall be included in the quarterly monitoring reports.

Statistical or non-statistical analysis shall be performed as soon as the monitoring data are available.

2. Ground Water Monitoring

The ground water surface elevation (in feet and hundredths, M.S.L) in all wells shall be measured on a quarterly basis and used to determine the velocity and direction of ground water flow. This information shall be displayed on a water table contour map and/or ground water flow net for the site and submitted with the quarterly monitoring reports.

The ground water monitoring well network shall consist of downgradient monitoring wells TM-1R, TM-2R, TM-3, TM-5, TM-6, TM-7, and the replacement well for TM-4 at the southern portion of the landfill. Locations of these wells are shown on Attachment B. Samples shall be collected from the wells at the frequency and for the parameters specified in Table 1.

3. Surface Water Monitoring

Surface water flows from on and around the WMU shall be sampled at the points where they leave the facility boundary, at RO-1, RO-2, RO-3, RO-4, and RO-5 during the first storm of the rainy season which produces significant flows and quarterly when water is present as shown on Attachment B. Samples shall be collected from all stations and analyzed as specified in Table 2.

Surface water monitoring reports may be submitted with the corresponding quarterly ground water monitoring and shall include evaluation of potential impacts of the facility on surface water quality and compliance with the Water Quality Protection Standard.

4. Leachate Monitoring

Leachate samples will be collected from the existing LCRS access port (JTL-1) for the constituents and at the schedule listed for ground water in Table 1. The location of JTL-1 is shown on Attachment B.

D. WATER QUALITY PROTECTION STANDARD

The Water Quality Protection Standard (Standard) shall consist of the following elements:

1. Constituents of Concern

The 'COC list' (list of Constituents of Concern required under 23 CCR 2550.3) shall include all constituents listed in Tables 1 and 2, the Waste Discharge Requirements No. 94-381 and all constituents listed in Attachments C and D. The Discharger shall monitor all COCs every five years, or more frequently as required.

2. Concentration Limits

The Concentration Limit for any given Constituent of Concern or Monitoring Parameter intrawell comparison in ground water (i.e., the uppermost aquifer) at a landfill shall be as

follows, and shall be used as the basis of comparison with data from the Monitoring Points in that monitored medium:

a. The value established in the Monitoring and Reporting Program for that constituent and medium;

(1) For inorganic constituents with less than 15% of background analyses below the laboratory detection level:

Tolerance Limit Method

- Tolerance levels to be calculated per the method described in EPA/530 SW-89-026, pages 5-20 through 5-24
- The following statistical tables will be used for calculation of tolerance limits:
  One-sided interval: EPA/530-SW-89-026, page B-9
  Two-sided interval (pH only): Miller, et al, 1924, page 413
- The constants used from the statistical tables will reflect the following:
  Probability Level (Y) = 95%
  Coverage (P) = 95%
- Non-detects in the background dataset will be treated at 1/2 their detection levels.
- Statistical exceedance of the tolerance level will trigger verification testing as described in Provision D.6.

(2) For inorganic constituents with greater than 15% of background concentrations below the laboratory detection level and those constituents having a non-normal distribution:

Graphical Method

- Time series plots of the raw data for the background and compliance period will be used to demonstrate out-of-control conditions.
- For those constituents with 100% non-detects, detection of the constituent will trigger a verification test.

(3) For volatile organic constituents (VOCs):

VOC Method

- All anthropogenic VOCs reported by the lab to be greater than their PQL will be considered a potential exceedance, and will trigger verification testing.

(4) Statistical recalculation of Background Concentrations and Tolerance Limits for each non-impacted monitor well will be done bi-annually and will include all analyses from each well through the end of even years (i.e.. 1992, 1994, 1996, etc.).

TABLE 1 - GROUND WATER MONITORING PROGRAM

Parameter	Units	Frequency
Field Parameters		
Temperature	°C	Quarterly
Ground Water Elevation	Ft. & hundredths, MSL	Quarterly
Specific Conductance	µmhos/cm	Quarterly
pH	pH units	Quarterly
Turbidity	Turbidity units	Quarterly
Monitoring Parameters		
Total Dissolved Solids (TDS)	mg/L	Quarterly
Chlorides	mg/L	Quarterly
Sulfates	mg/L	Quarterly
Potassium	mg/L	Quarterly
Volatile Organic Compounds (EPA Method 8260, See Attachment C)	µg/L	Quarterly
Constituents of Concern[1]		
Carbonate	mg/L	Quarterly
Bicarbonate	mg/L	Quarterly
Calcium	mg/L	Quarterly
Magnesium	mg/L	Quarterly
Sodium	mg/L	Quarterly
Nitrate	mg/L	Quarterly
Total Alkalinity	mg/L	5 years
Dissolved Organic Carbon	mg/L	5 years
Semi-Volatile Organic Compounds (EPA Method 8270)	µg/L	5 years
Organophosphorus Compounds (EPA Method 8141)	µg/L	5 years
Chlorinated Herbicides (EPA Method 8150)	µg/L	5 years
Inorganics (dissolved) (See Attachment D for Method)	mg/L	5 years

[1] The ground water shall be tested in the second quarter (spring) of 1995 for the entire list of COCs listed in Table 1. Those COCs that are detected will be analyzed in the third quarter (summer) of 1995. Any COCs detected in the retest sample shall be included in the COC list for ground water. Thereafter, the COCs for the ground water monitoring program shall include those COCs detected and any COCs detected under the leachate monitoring program.

TABLE 2 - SURFACE WATER MONITORING PROGRAM

Parameter	Units	Frequency
Field Parameters		
Temperature	°C	Quarterly
Specific Conductance	µmhos/cm	Quarterly
pH	pH units	Quarterly
Turbidity	Turbidity units	Quarterly
Monitoring Parameters		
Total Suspended Solids (TSS)	mg/L	Quarterly
Total Dissolved Solids (TDS)	mg/L	Quarterly
Chlorides	mg/L	Quarterly
Sulfates	mg/L	Quarterly
Potassium	mg/L	Quarterly
Constituents of Concern[1]		
Carbonate	mg/L	Quarterly
Bicarbonate	mg/L	Quarterly
Calcium	mg/L	Quarterly
Magnesium	mg/L	Quarterly
Sodium	mg/L	Quarterly
Nitrate	mg/L	Quarterly
Total Alkalinity	mg/L	5 years
Dissolved Organic Carbon	mg/L	5 years
Chemical Oxygen Demand	mg/L	5 years
Dissolved Oxygen	mg/L	5 years
Inorganics (dissolved) (See Attachment D for Method)	mg/L	5 years

[1] The surface water shall be tested in the fourth quarter of 1994 for the entire list of COCs listed in Table 2. Those COCs that are detected will be analyzed in the Spring of 1995. Any COCs detected in the retest sample shall be included in the COC list for surface water. Thereafter, the COCs for the surface water monitoring program shall include those COCs detected and any COCs detected under the leachate monitoring program.

TABLE 3a - GROUND WATER CONCENTRATION LIMITS FOR TM-1R

Constituent	Units	Limit [1]
Specific Conductance (EC)	µmhos/cm	975
pH	pH units	6.6 - 7.3
Total Dissolved Solids (TDS)	mg/L	643.8
Alkalinity, Bicarbonate	mg/L	457.8
Chloride	mg/L	109.9
VOCs (EPA 8260 and 8270)	µg/L	PQL
Sulfate	mg/L	24.6
Nitrate as Nitrogen	mg/L	Graphic
Aluminum, Dissolved	mg/L	MDL
Antimony, Dissolved	mg/L	MDL
Arsenic, Dissolved	mg/L	MDL
Barium, Dissolved	mg/L	--
Beryllium, Dissolved	mg/L	--
Boron, Dissolved	mg/L	--
Cadmium, Dissolved	mg/L	MDL
Calcium, Dissolved	mg/L	--
Chromium, Total Dissolved	mg/L	MDL
Cobalt, Dissolved	mg/L	--
Copper, Dissolved	mg/L	MDL
Iron, Dissolved	mg/L	0.449
Lead, Dissolved	mg/L	MDL
Magnesium, Dissolved	mg/L	--
Manganese, Dissolved	mg/L	0.731
Mercury, Dissolved	mg/L	MDL
Molybdenum, Dissolved	mg/L	--
Nickel, Dissolved	mg/L	MDL
Potassium, Dissolved	mg/L	--
Selenium, Dissolved	mg/L	MDL
Silver, Dissolved	mg/L	MDL
Sodium, Dissolved	mg/L	--
Thallium, Dissolved	mg/L	MDL
Tin, Dissolved	mg/L	--
Vanadium, Dissolved	mg/L	--
Zinc, Dissolved	mg/L	Graphic

[1] The Discharger shall monitor all inorganic COCs detected in the initial COC sampling period at this well or in the leachate. Sampling will continue quarterly until a minimum of eight background analyses are available in order to determine concentration limits where limits have not been established (--).

TABLE 3b - GROUND WATER CONCENTRATION LIMITS FOR TM-2

Constituent	Units	Limit[1]
Specific Conductance (EC)	µmhos/cm	1676.8
pH	pH units	6.1 - 7.8
Total Dissolved Solids (TDS)	mg/L	1080.6
Alkalinity, Bicarbonate	mg/L	627.1
Chloride	mg/L	223.6
VOCs (EPA 8260 and 8270)	µg/L	PQL
Sulfate	mg/L	118.7
Nitrate as Nitrogen	mg/L	Graphic
Aluminum, Dissolved	mg/L	MDL
Antimony, Dissolved	mg/L	MDL
Arsenic, Dissolved	mg/L	MDL
Barium, Dissolved	mg/L	--
Beryllium, Dissolved	mg/L	--
Boron, Dissolved	mg/L	--
Cadmium. Dissolved	mg/L	MDL
Calcium, Dissolved	mg/L	--
Chromium, Total Dissolved	mg/L	Graphic
Cobalt, Dissolved	mg/L	--
Copper, Dissolved	mg/L	Graphic
Iron, Dissolved	mg/L	0.449
Lead, Dissolved	mg/L	MDL
Magnesium, Dissolved	mg/L	--
Manganese, Dissolved	mg/L	Graphic
Mercury, Dissolved	mg/L	Graphic
Molybdenum. Dissolved	mg/L	--
Nickel, Dissolved	mg/L	MDL
Potassium, Dissolved	mg/L	--
Selenium, Dissolved	mg/L	MDL
Silver, Dissolved	mg/L	MDL
Sodium, Dissolved	mg/L	--
Thallium, Dissolved	mg/L	MDL
Tin, Dissolved	mg/L	--
Vanadium, Dissolved	mg/L	--
Zinc, Dissolved	mg/L	0.149

[1] Sampling at replacement well TM-2R for inorganic COCs will continue quarterly until a minimum of eight background analyses are available in order to determine concentration limits.

TABLE 3c - GROUND WATER CONCENTRATION LIMITS FOR TM-3

Constituent	Units	Limit [1]
Specific Conductance (EC)	µmhos/cm	1188.6
pH	pH units	6.1 - 7.9
Total Dissolved Solids (TDS)	mg/L	779.4
Alkalinity, Bicarbonate	mg/L	445.6
Chloride	mg/L	168.4
VOCs (EPA 8260 and 8270)	µg/L	PQL
Sulfate	mg/L	72.6
Nitrate as Nitrogen	mg/L	2.1
Aluminum, Dissolved	mg/L	Graphic
Antimony, Dissolved	mg/L	MDL
Arsenic, Dissolved	mg/L	MDL
Barium, Dissolved	mg/L	--
Beryllium, Dissolved	mg/L	--
Boron, Dissolved	mg/L	--
Cadmium, Dissolved	mg/L	MDL
Calcium, Dissolved	mg/L	--
Chromium, Total Dissolved	mg/L	MDL
Cobalt, Dissolved	mg/L	--
Copper, Dissolved	mg/L	Graphic
Iron, Dissolved	mg/L	Graphic
Lead, Dissolved	mg/L	Graphic
Magnesium, Dissolved	mg/L	--
Manganese, Dissolved	mg/L	Graphic
Mercury, Dissolved	mg/L	MDL
Molybdenum, Dissolved	mg/L	--
Nickel, Dissolved	mg/L	MDL
Potassium, Dissolved	mg/L	--
Selenium, Dissolved	mg/L	MDL
Silver, Dissolved	mg/L	MDL
Sodium, Dissolved	mg/L	--
Thallium, Dissolved	mg/L	MDL
Tin, Dissolved	mg/L	--
Vanadium, Dissolved	mg/L	--
Zinc, Dissolved	mg/L	Graphic

[1] The Discharger shall monitor all inorganic COCs detected in the initial COC sampling period at this well or in the leachate. Sampling will continue quarterly until a minimum of eight background analyses are available in order to determine concentration limits where limits have not been established (--).

TABLE 3d - GROUND WATER CONCENTRATION LIMITS FOR DW-4

Constituent	Units	Limit [1]
Specific Conductance (EC)	µmhos/cm	1188.6
pH	pH units	6.3 - 7.3
Total Dissolved Solids (TDS)	mg/L	504.2
Alkalinity, Bicarbonate	mg/L	395.3
Chloride	mg/L	11.4
VOCs (EPA 8260 and 8270)	µg/L	PQL
Sulfate	mg/L	13.8
Nitrate as Nitrogen	mg/L	1.0
Aluminum, Dissolved	mg/L	Graphic
Antimony, Dissolved	mg/L	--
Arsenic, Dissolved	mg/L	MDL
Barium, Dissolved	mg/L	--
Beryllium, Dissolved	mg/L	--
Boron, Dissolved	mg/L	--
Cadmium, Dissolved	mg/L	--
Calcium, Dissolved	mg/L	--
Chromium, Total Dissolved	mg/L	MDL
Cobalt, Dissolved	mg/L	--
Copper, Dissolved	mg/L	MDL
Iron, Dissolved	mg/L	MDL
Lead, Dissolved	mg/L	MDL
Magnesium, Dissolved	mg/L	--
Manganese, Dissolved	mg/L	Graphic
Mercury, Dissolved	mg/L	MDL
Molybdenum, Dissolved	mg/L	--
Nickel, Dissolved	mg/L	--
Potassium, Dissolved	mg/L	--
Selenium, Dissolved	mg/L	--
Silver, Dissolved	mg/L	--
Sodium, Dissolved	mg/L	--
Thallium, Dissolved	mg/L	--
Tin, Dissolved	mg/L	--
Vanadium, Dissolved	mg/L	--
Zinc, Dissolved	mg/L	Graphic

[1] The Discharger shall monitor all inorganic COCs detected in the initial COC sampling period at this well or in the leachate. Sampling will continue quarterly until a minimum of eight background analyses are available in order to determine concentration limits where limits have not been established (--).

TABLE 4 - SURFACE WATER CONCENTRATION LIMITS

Constituent	Units	Limit [1]
Specific Conductance (EC)	µmhos/cm	--
pH	pH units	--
Total Dissolved Solids (TDS)	mg/L	--
Alkalinity, Bicarbonate	mg/L	--
Chloride	mg/L	--
Sulfate	mg/L	--
Nitrate as Nitrogen	mg/L	--
Aluminum, Dissolved	mg/L	--
Antimony, Dissolved	mg/L	--
Arsenic, Dissolved	mg/L	--
Barium, Dissolved	mg/L	--
Beryllium, Dissolved	mg/L	--
Boron, Dissolved	mg/L	--
Cadmium, Dissolved	mg/L	--
Calcium, Dissolved	mg/L	--
Chromium, Total Dissolved	mg/L	--
Cobalt, Dissolved	mg/L	--
Copper, Dissolved	mg/L	--
Iron, Dissolved	mg/L	--
Lead, Dissolved	mg/L	--
Magnesium, Dissolved	mg/L	--
Manganese, Dissolved	mg/L	--
Mercury, Dissolved	mg/L	--
Molybdenum, Dissolved	mg/L	--
Nickel, Dissolved	mg/L	--
Potassium, Dissolved	mg/L	--
Selenium, Dissolved	mg/L	--
Silver, Dissolved	mg/L	--
Sodium, Dissolved	mg/L	--
Thallium, Dissolved	mg/L	--
Tin, Dissolved	mg/L	--
Vanadium, Dissolved	mg/L	--
Zinc, Dissolved	mg/L	--

[1] Surface water quality tabulations will be prepared and the results evaluated for the presence of any leachate constituents that are indicative of a release to the surface.

b. A concentration limit greater than background, as approved by the Board for use during or after corrective action.

The concentration limits for ground and surface water shall be determined when sufficient data is available. The concentration limits for ground water shall be determined using wells TM-1R, TM-2, and TM-3. Additional wells shall be installed as part of the evaluation monitoring program (TM-2R, TM-5, TM-6, TM-7, and a replacement well for TM-4) which will establish additional ground water monitoring stations surrounding the landfill. The concentration limits for each ground water monitoring location is shown on Tables 3a, b, c, and d. Concentration limits for each surface water location, to be determined, is shown on Table 4.

3. Monitoring Points

The ground water monitoring points for detection monitoring shall be TM-1R, TM-2, and TM-3, as shown in Attachment B. Additional wells shall be installed as part of the evaluation monitoring program (TM-2R, TM-5, TM-6, TM-7) shall constitute detection monitoring points. A replacement well for TM-4 will be installed immediately to the south of the landfill following the clean closure of the southern landfill area. This well will constitute a compliance monitoring point. Until well TM-4's replacement well can be installed, well DW-4 will be monitored as the southern compliance point.

4. Points of Compliance

The points of compliance for ground water are Monitoring Wells TM-1R, TM-2, TM-3, in addition to wells proposed to be installed as part of the evaluation monitoring program (TM-2R, TM-5, TM-6, TM-7, and a replacement well for TM-4).

5. Compliance Period

The Compliance Period is the number of years equal to the active life of the waste management plus the closure period. Each time the Water Quality Protection Standard is exceeded (i.e., a release is discovered), the landfill begins a Compliance Period on the date the Board directs the Discharger to begin an Evaluation Monitoring Program. If the Discharger's Corrective Action Program (CAP) has not achieved compliance with the Standard by the scheduled end of the Compliance Period, the Compliance Period is automatically extended until the landfill has been in continuous compliance for at least three consecutive years.

6. Verification Procedures

Verification sampling and analysis shall be performed for each constituent which shows a exceedance of the concentration limits and has not previously been verified. Two discrete samples will be collected and analyzed for the indicated constituent within 30 days of the time that evidence of a release is identified. If either one of the verification samples exceeds the concentration limit it will be considered confirmation of a release.

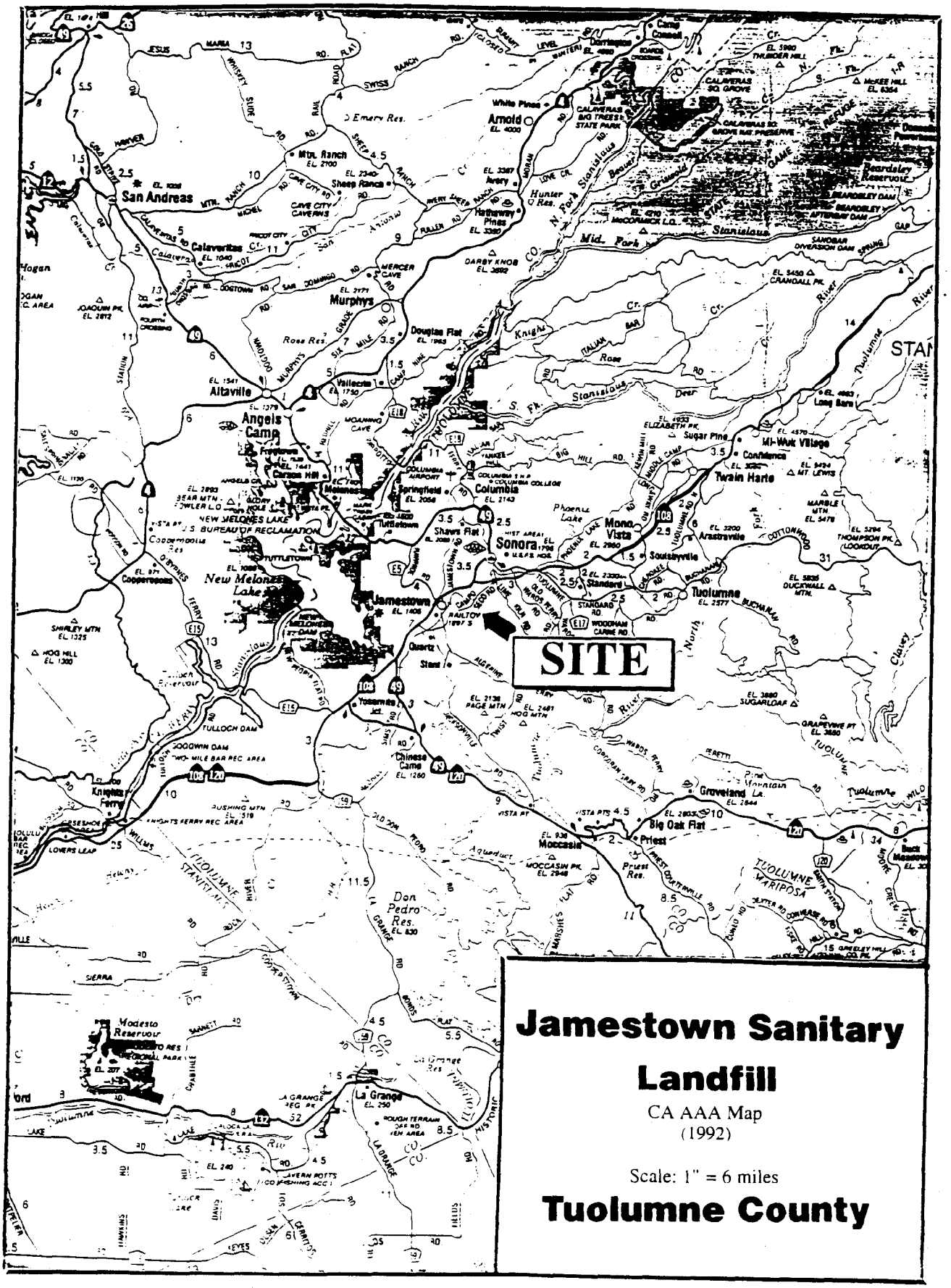
The Discharger shall implement the above monitoring program on the effective date of this Order.

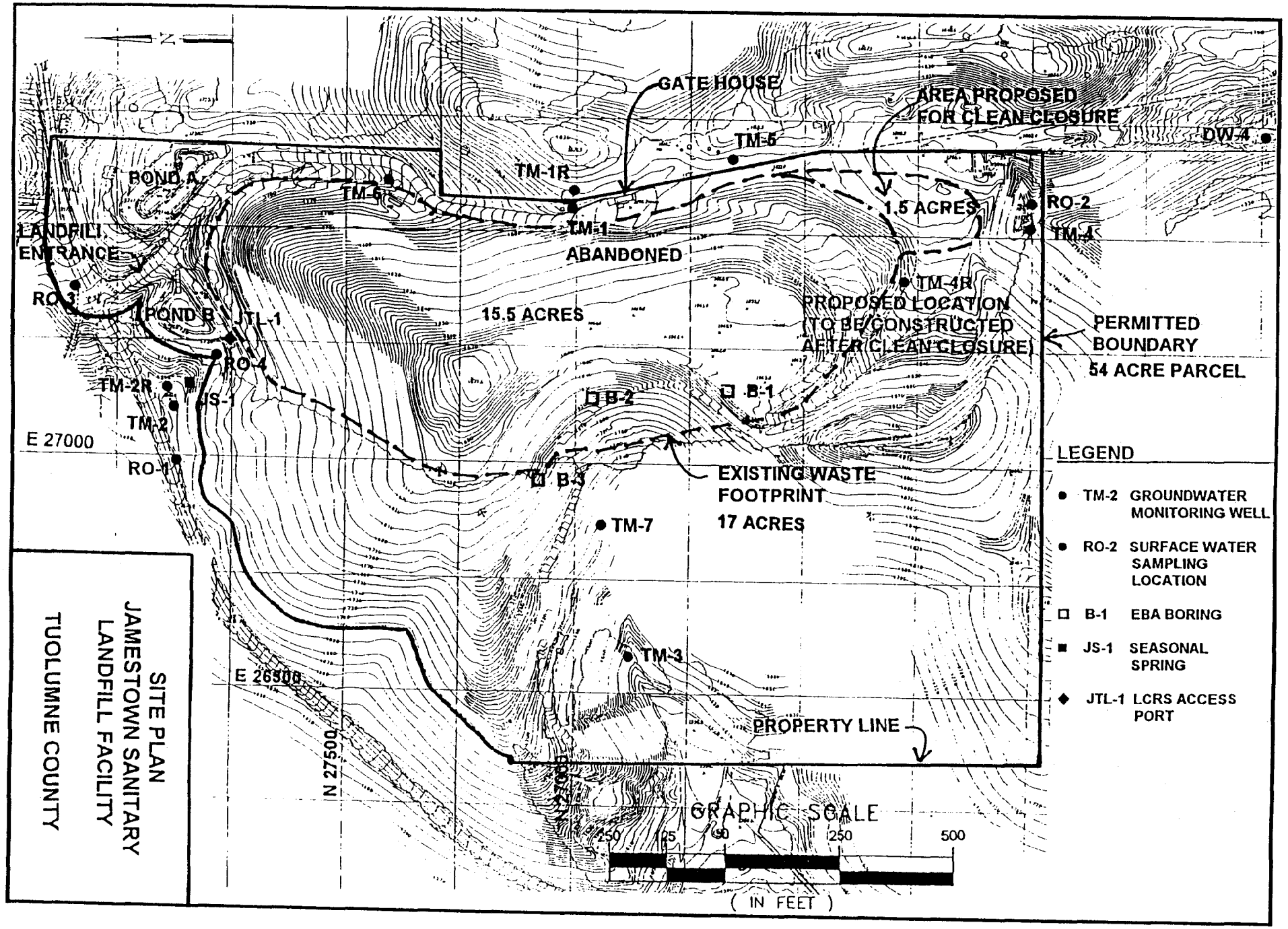
Ordered by _____
WILLIAM H. CROOKS. Executive Officer

9 December 1994
(Date)

KAS

ATTACHMENT A





SITE PLAN
JAMESTOWN SANITARY
LANDFILL FACILITY
TUOLUMNE COUNTY

ATTACHMENT B

Attachment C

MONITORING PARAMETERS FOR DETECTION MONITORING

Surrogates for Metallic Constituents:

- pH
- Total Dissolved Solids
- Specific Conductivity
- Chloride
- Sulfate
- Nitrate nitrogen

Constituents included in VOC_{water} (by USEPA Method 8260):

- Acetone
- Acrylonitrile
- Benzene
- Bromochloromethane
- Bromodichloromethane
- Bromoform (Tribromomethane)
- Carbon disulfide
- Carbon tetrachloride
- Chlorobenzene
- Chloroethane (Ethyl chloride)
- Chloroform (Trichloromethane)
- Dibromochloromethane (Chlorodibromomethane)
- 1,2-Dibromo-3-chloropropane (DBCP)
- 1,2-Dibromoethane (Ethylene dibromide; EDB)
- o-Dichlorobenzene (1,2-Dichlorobenzene)
- p-Dichlorobenzene (1,4-Dichlorobenzene)
- trans-1,4-Dichloro-2-butene
- 1,1-Dichloroethane (Ethylidene chloride)
- 1,2-Dichloroethane (Ethylene dichloride)
- 1,1-Dichloroethylene (1,1-Dichloroethene; Vinylidene chloride)
- cis-1,2-Dichloroethylene (cis-1,2-Dichloroethene)
- trans-1,2-Dichloroethylene (trans-1,2-Dichloroethene)
- 1,2-Dichloropropane (Propylene dichloride)
- cis-1,3-Dichloropropene
- trans-1,3-Dichloropropene
- Ethylbenzene
- 2-Hexanone (Methyl butyl ketone)
- Methyl bromide (Bromomethene)
- Methyl chloride (Chloromethane)
- Methylene bromide (Dibromomethane)
- Methylene chloride (Dichloromethane)
- Methyl ethyl ketone (MEK; 2-Butanone)
- Methyl iodide (Iodomethane)
- 4-Methyl-2-pentanone (Methyl isobutylketone)
- Styrene
- 1,1,1,2-Tetrachloroethane
- 1,1,2,2-Tetrachloroethane
- Tetrachloroethylene (Tetrachloroethene; Perchloroethylene)
- Toluene

Attachment C (continued)

1,1,1-Trichloethane (Methylchloroform)
1,1,2-Trichloroethane
Trichloroethylene (Trichloroethene)
Trichlorofluoromethane (CFC-11)
1,2,3-Trichloropropane
Vinyl acetate
Vinyl chloride
Xylenes

Attachment D

CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

Inorganics (by USEPA Method):

Antimony	6010
Barium	6010
Beryllium	6010
Cadmium	6010
Chromium	6010
Cobalt	6010
Copper	6010
Silver	6010
Tin	6010
Vanadium	6010
Zinc	6010
Arsenic	7061
Lead	7421
Mercury	7470
Nickel	7520
Selenium	7741
Thallium	7841
Cyanide	9010
Sulfide	9030

Volatile Organics (USEPA Method 8260):

Acetone
Acetonitrile (Methyl cyanide)
Acrolein
Acrylonitrile
Allyl chloride (3-Chloropropene)
Benzene
Bis(2-ethylhexyl) phthalate
Bromochloromethane (Chlorobromomethane)
Bromodichloromethane (Dibromochloromethane)
Bromoform (Tribromomethane)
Carbon disulfide
Carbon tetrachloride
Chlorobenzene
Chloroethane (Ethyl chloride)
Chloroform (Trichloromethane)
Chloroprene
Dibromochloromethane (Chlorodibromomethane)
1,2-Dibromo-3-chloropropane (DBCP)
1,2-Dibromoethane (Ethylene dribromide; EDB)
o-Dichlorobenzene (1,2-Dichlorobenzene)
m-Dichlorobenzene (1,3-Dichlorobenzene)
p-Dichlorobenzene (1,4-Dichlorobenzene)
trans-1,4-Dichloro-2-butene
Dichlorodifluoromethane (CFC 12)

Attachment D (continued)

1,1-Dichloroethane (Ethylidene chloride)
1,2-Dichloroethane (Ethylene dichloride)
1,1-Dichloroethylene (1,1-Dichloroethene; Vinylidene chloride)
cis-1,2-Dichloroethylene (cis-1,2-Dichloroethene)
trans-1,2-Dichloroethylene (trans-1,2-Dichloroethene)
1,2-Dichloropropane (Propylene dichloride)
1,3-Dichloropropane (Trimethylene dichloride)
2,2-Dichloropropane (Isopropylidene chloride)
1,1-Dichloropropene
cis-1,3-Dichloropropene
trans-1,3-Dichloropropene
Ethylbenzene
Hexachlorobutadiene
2-Hexanone (Methyl butyl ketone)
Isobutyl alcohol
Isodrin
Methacrylonitrile
Methyl bromide (Bromomethane)
Methyl chloride (Chloromethane)
Methyl ethyl ketone (MEK; 2-Butanone)
Methyl iodide (Iodomethane)
Methyl methacrylate
4-Methyl-2-pentanone (Methyl isobutyl ketone)
Methylene bromide (Dibromomethane)
Methylene chloride (Dichloromethane)
Naphthalene
Propionitrile (Ethyl cyanide)
Styrene
1,1,1,2-Tetrachloroethane
1,1,2,2-Tetrachloroethane
Tetrachloroethylene (Tetrachloroethene; Perchloroethylene; PCE)
Toluene
1,2,4-Trichlorobenzene
1,1,1-Trichloroethane, Methylchloroform
1,1,2-Trichloroethane
Trichloroethylene (Trichloroethene; TCE)
Trichlorofluoromethane (CFC-11)
1,2,3-Trichloropropane
Vinyl acetate
Vinyl chloride (Chloroethene)
Xylene (total)

Semivolatile Organics (USEPA Method 8270 - base, neutral, & acid extractables):
Acenaphthene
Acenaphthylene
Acetophenone
2-Acetylaminofluorene (2-AAF)
Aldrin

Attachment D (continued)

4-Aminobiphenyl
Anthracene
Benzo[a]anthracene (Benzanthracene)
Benzo[b]fluoranthene
Benzo[k]fluoranthene
Benzo[g,h,i]perylene
Benzo[a]pyrene
Benzyl alcohol
alpha-BHC
beta-BHC
delta-BHC
gamma-BHC (Lindane)
Bis(2-chloroethoxy)methane
Bis(2-chloroethyl) ether (Dichloroethyl ether)
Bis(2-chloro-1-methyethyl) ether (Bis(2-chloroisopropyl) ether; DCIP)
4-Bromophenyl phenyl ether
Butyl benzyl phthalate (Benzyl butyl phthalate)
Chlordane
p-Chloroaniline
Chlorobenzilate
p-Chloro-m-cresol (4-Chloro-3-methylphenol)
2-Chloronaphthalene
2-Chlorophenol
4-Chlorophenyl phenyl ether
Chrysene
o-Cresol (2-methylphenol)
m-Cresol (3-methylphenol)
p-Cresol (4-methylphenol)
4,4'-DDD
4,4'-DDE
4,4'-DDT
Diallate
Dibenz[a,h]anthracene
Dibenzofuran
Di-n-butyl phthalate
o-Dichlorobenzene (1,2-Dichlorobenzene)
m-Dichlorobenzene (1,3-Dichlorobenzene)
p-Dichlorobenzene (1,4-Dichlorobenzene)
3,3'-Dichlorobenzidine
2,4-Dichlorophenol
2,6-Dichlorophenol
Dieldrin
Diethyl phthalate
p-(Dimethylamino)azobenzene
7,12-Dimethylbenz[a]anthracene
3,3'-Dimethylbenzidine
2,4-Dimehtylphenol (m-Xylenol)
Dimethyl phthalate

Attachment D (continued)

m-Dinitrobenzene
4,6-Dinitro-o-cresol (4,6-Dinitro-2-methylphenol)
2,4-Dinitrophenol
2,4-Dinitrotoluene
2,6-Dinitrotoluene
Di-n-octyl phthalate
Diphenylamine
Endosulfan I
Endosulfan II
Endosulfan sulfate
Endrin
Endrin aldehyde
Ethyl methacrylate
Ethyl methanesulfonate
Famphur
Fluoranthene
Fluorene
Heptachlor
Heptachlor epoxide
Hexachlorobenzene
Hexachlorobutadiene
Hexachlorocyclopentadiene
Hexachloroethane
Hexachloropropene
Indeno(1,2,3-c,d)pyrene
Isophorone
Isosafrole
Kepone
Methapyrilene
Methoxychlor
3-Methylcholanthrene
Methyl methanesulfonate
2-Methylnaphthalene
Naphthalene
1,4-Naphthoquinone
1-Naphthylamine
2-Naphthylamine
o-Nitroaniline (2-Nitroaniline)
m-Nitroaniline (3-Nitroaniline)
p-Nitroaniline (4-Nitroaniline)
Nitrobenzene
o-Nitrophenol (2-Nitrophenol)
p-Nitrophenol (4-Nitrophenol)
N-Nitrosodi-n-butylamine (Di-n-butylnitrosamine)
N-Nitrosodiethylamine (Diethylnitrosamine)
N-Nitrosodimethylamine (Dimethylnitrosamine)
N-Nitrosodiphenylamine (Diphenylnitrosamine)
N-Nitrosodipropylamine (N-Nitroso-N-dipropylamine; Di-n-propylnitrosamine)

Attachment D (continued)

N-Nitrosomethylethylamine (Methylethylnitrosamine)
N-Nitrosopiperidine
N-Nitrosospyrrolidine
5-Nitro-o-toluidine
Pentachlorobenzene
Pentachloronitrobenzene (PCNB)
Pentachlorophenol
Phenacetin
Phenanthrene
Phenol
p-Phenylenediamine
Polychlorinated biphenyls (PCBs; Aroclors)
Pronamide
Pyrene
Safrole
1,2,4,5-Tetrachlorobenzene
2,3,4,6-Tetrachlorophenol
o-Toluidine
Toxaphene
1,2,4-Trichlorobenzene
2,4,5-Trichlorophenol
2,4,6-Trichlorophenol
0,0,0-Triethyl phosphorothioate
sym-Trinitrobenzene

Organophosphorus Compounds (USEPA Method 8141):
0,0-Diethyl 0-2-pyrazinyl phosphorothioate (Thionazin)
Dimethoate
Disulfoton
Methyl parathion (Parathion methyl)
Parathion
Phorate

Chlorinated Herbicides (USEPA Method 8150):
2,4-D (2,4-Dichlorophenoxyacetic acid)
Dinoseb (DNBP; 2-sec-Butyl-4,6-dinitrophenol)
Silvex (2,4,5-Trichlorophenoxypropionic acid; 2,4,5-TP)
2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)

INFORMATION SHEET

JAMESTOWN SANITARY LANDFILL FACILITY
CLASS III LANDFILL
TUOLUMNE COUNTY

This 54-acre facility has an existing waste management unit (disposal area) covering approximately 17 acres. Approximately 1.5 acres of this area is proposed to be clean closed and consolidated into the active disposal area of the landfill, resulting in a waste disposal footprint of approximately 15.5 acres. The remaining 37 acres is used for site access, scalehouse, staging areas, stormwater runoff control, cover soil borrow, and as a buffer to surrounding land uses. The remaining life expectancy of the landfill is approximately 2 years (1996). The site is required to begin closure activities in the Summer of 1996 whether or not the landfill has reached maximum capacity. Closure will be in accordance with Chapter 15 and Subtitle D.

The area to the east and south of the landfill is characterized by grassland and open pasture utilized primarily for cattle grazing. The most intense land use exists to the west and north of the site, with the City of Jamestown, in addition to several small communities.

The site is at the apex of a saddle formation at the head of several small ravines. The site has been in operation since 1974 and receives about 95 percent of the County's solid waste.

The site is characterized by a thin soil mantle overlying an average of 20 feet of weathered shales atop bedrock. In general, the hydraulic regime at the site is expected to be a hardrock, fracture-dominated type, with water moving in water-bearing fractures and veins. Seasonal saturated flow may occur along the weathered rock/unweathered rock interface. Ground water recharge areas are limited to the area on-site. The site is reported to be in a ground water deficient area. Typically, in fractured rock systems, production rates for water wells are relatively low and the water highly mineralized. The water well drilled on-site yielded only three gallons/minute.

An average of 33 inches of rain falls at this site, mainly during the period of November-May. The rest of the year is characterized by hot, dry weather, with an average evaporation rate of 50 inches.

Initial development of the site consisted of constructing an earthfilled dam across the western ravine, with subsequent height increases as the site was filled. In 1980, this process was extended to the northern ravine. The design specifications dictated a two-foot base seal, meeting low permeability requirements. It was felt this was necessary to assure protection of ground water from leachate entering the underlying fracture network. The County reports that the seal was constructed to design specifications.

The design specifications also included a leachate collection and removal system consisting of a gravel trench at the toe end of each working area. It was reported that these systems were installed as designed. Access to one system (west) was lost in 1980.

Water monitoring has been conducted at the landfill on a regular basis since December 1988. Through November 1991, the ground water system was comprised of 4 wells; TM-1, TM-2, TM-3 and TM-4, east, north, west, and south of the landfill, respectively. In December 1991, TM-1 was abandoned by grout sealing the entire well bore, and a new monitoring well, TM-1R was drilled to replace it. TM-1R is located a few feet southeast of

where TM-1 was located. Well TM-4, however, has not been sampled regularly due to a lack of water in the well. Pursuant to the Board's recommendation in September 1991, well DW-4 has been monitored as a replacement for TM-4. Background water quality was monitored through sampling of an off-site water supply well, CFW-1 (Campbell Flat Well), approximately 4,500 feet east of the landfill and was replaced by well DW-2 in the first quarter of 1992.

Spring activity is reported to be present on the western side of the site during wet years. A seasonal spring (JS-1) between the landfill and TM-2 was uncovered during construction activities on the northern portion of the landfill. The initial sampling event at the spring indicated the presence of vinyl chloride; however, vinyl chloride has not been detected in any subsequent sampling events at this site. A collection tank was installed in order to collect and sample the spring water. Since that time the spring water is pumped from the collection tank; samples are collected, analyzed, and reported along with the required monitoring program. The water pumped from the collection tank is used for on-site dust control.

Three borings (B-1, B-2, and B-3) were drilled through the central landfill area as part of a slope stability investigation. During an inspection on 2 November 1994, Board staff observed that the borings had been buried during grading activities at the landfill. The Discharger is required to investigate the status of the borings and report on how they will be abandoned. Geologic logs indicate all three borings were drilled through the clay liner and into the underlying weathered schist.

Detection monitoring at wells TM-1R and TM-2 has indicated a statistically significant change in ground water chemistry. Dichlorodifluoromethane was detected and verified in the third quarter 1993 and has been detected at levels up to 12.0 µg/l in eight of the ten samples collected at TM-1R since first detection. Chloroethane has been detected at concentrations up to 6.1 µg/l in five of six samples since May 1993. Vinyl chloride has been identified sporadically since November 1992 with three of the eight samples collected since that time reporting vinyl chloride above the laboratory detection limit. Vinyl Chloride has been detected at the detection level once at TM-2 (fourth quarter 1992), but has not been detected since. In addition, monitoring data provide evidence of a release of inorganic constituents in monitoring well TM-2.

The Discharger has submitted an evaluation monitoring program to determine the horizontal and vertical extent of the ground water contamination. Additional ground water monitoring wells TM-2R, TM-5, TM-6, TM-7, and an enhanced collection trench for the spring (JS-1) are proposed to be installed and used to define the contaminant plume. A permanent replacement well for TM-4 (DW-4 has been an interim replacement well since 1991) is planned following the clean closure of the southern area of the landfill. The Board recommended that the Discharger immediately implement the evaluation monitoring program and is required to submit an engineering feasibility study for corrective action which meets the requirements of §2550.10 of Chapter 15.